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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/826,950	04/16/2004	Stephen K. Pinto	17146-004001	1603
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FISH & RICHARDSON PC P.O. BOX 1022 MINNEAPOLIS, MN 55440-1022				
			EXAMINER BHARADWAJ, KALPANA	
			ART UNIT 2129	PAPER NUMBER
			MAIL DATE 12/26/2007	DELIVERY MODE PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary

Application No.

10/826,950

Applicant(s)

PINTO ET AL.

Examiner

Bharadwaj Kalpana

Art Unit

2129

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 04 October 2007.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-11 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-11 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. _____.
 - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- ☐ Notice of References Cited (PTO-892)
- ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- ☒ Information Disclosure Statement(s) (PTO/SB/08)
Paper No(s)/Mail Date 10/04/2007.
- ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____.
- ☐ Notice of Informal Patent Application
- ☐ Other: _____.

DETAILED ACTION

1. This Office Action is in response to an AMENDMENT entered Oct 04, 2007 for the patent application 10/826950 filed on Apr 16, 2004.
2. All prior office actions are fully incorporated into this Office Action by reference.

Status of Claims

3. Claims 1-11 are pending.

Claim Rejections - 35 USC § 103

4. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 1-6 and 8-11 are rejected under 35 U.S.C. 103(a) as being unpatentable over Fox (USPN 5,491,629, referred to as **Fox**).

As to **claims 1 and 6**, Fox discloses a machine-based method comprising:
receiving historical (**Fox**, C 18 L 50: historical weather data) multi-dimensional data (**Fox**, C 13 L 13-20: weather data 201) representing multiple source variables having different strengths of measurement (**Fox**, C 14 L 60: "k" variables; also see C 06 L 22:

weather and other variables; **EN:** climatology in general uses multiple source elements like temperature, precipitation etc. see C 05 L 16) to be used as an input to a predictive model (**Fox**, Abstract: predictive model) of a commercial system (**Fox**, Abstract: Executive Information System (EIS); **EN:** EIS is a representative of a commercial system) , applying transformations to the source variables (**Fox**, C 13 L 18: transformations of those variables), and applying transformations to the data that are selected based on the strength of measurement represented by a variable (**Fox**, C 05 L 55: weather impact measurement through historical correlation; **EN:** correlation is to establish a relation between variables, and measurement through correlation would be based on the strength of measurement represented by a variable).

Fox does not teach variables selected to increase predictive power. However, it would have been obvious to one with ordinary skills in the art at the time the invention was made to see that since the goal of Fox's invention is to improve productivity (**Fox**, C 04 L 48: improve productivity) by weather forecasting, there would be increased predictive power to support it.

As to the additional limitation in **Claim 6**, Fox discloses adjusting unstable values of the variables (**Fox**, C 14 L 64: regression is the statistical technique employed; **EN:** regression is a statistical technique that deals with adjustment and counter-adjustment) to reduce inaccurate (**Fox**, C 15 L 02: more accurately define the observed changes) associations (**Fox**, C 14 L 65: quantify these relationships; **EN:** relationships are associations between variables).

Fox does not teach predictor variables and target variables. However, it would have been obvious to one with ordinary skills in the art at the time the invention was made to see that Fox's system is designed to solve problems related to source and target merchandise (**Fox**, C 02 L 19: source, acquire, and achieve specific target merchandise) using prediction, and therefore, it would be using predictor and target variables.

As to **claim 2**, Fox discloses the method of claim 1 in which the strength of measurement (**Fox**, C 06 L 60: measuring the impact of past weather) comprises at least one of nominal, ordinal, and interval (**Fox**, C 03 L 64: time intervals in specific regions; **EN**: measuring time intervals is 'interval measurement').

As to **claim 3**, Fox discloses the method of claim 1 in which the strength of a measurement (**Fox**, 05 L 55: weather impact measurement) is represented in stored metadata (**Fig. 2**: See blocks 136, 116 and 201; **EN**: metadata is data about data) associated with the data.

As to **claim 4**, Fox discloses the method of claim 1 also including displaying to a user a representation of a response function (**Fox**, C07 L 63: displays the impact of any internal (industry) and external factors; **EN**: Response functions express a cause and effect relationship; A display to show the impact of factors would represent a response function of variables associated with factors being considered).

Fox does not teach specifically, response of a target variable against untransformed, transformed, and target variables associated with the data. However, it would have been obvious to one with ordinary skills in the art at the time the invention was made to see that since Fox's system has a database initializer that transforms the datasets (**Fox**, C 11 L 42: The database initializer 702 transforms the datasets), there would be a mapping of transformed, untransformed and target variables, which is a response function.

As to **claim 5**, Fox discloses the method of claim 1 also including persistently storing (**Fox**, C 02 L 50: mainframe databases for subsequent analysis; **EN**: persistent storage is achieved by any non-volatile storage like a database) both the source variables and related transformed versions of the source variables (**Fox**, C 12 L 59: variable database; **EN**: a variable database encompasses all kinds of variables including source and transformed).

As to **claim 8**, Fox discloses a machine-based method comprising in connection with a project in which a user generates a predictive model (**Fox**, Abstract: predictive model) based on historical data about a system being modeled (**Fox**, C 18 L 50: historical weather data).

Fox does not teach automatically imputing missing values for continuous variables associated with the data, the variables having different strengths of measurement. However, it would have been obvious to one with ordinary skills in the

art at the time the invention was made that Fox's invention uses regression (**Fox**, C 14 L 64: regression is the statistical technique employed), and to employ regression one would use a method like curve-fitting where missing values are imputed, because this would reduce distortion.

As to **claim 9**, Fox teaches the method of claim 8 in which the user is enabled to invoke features that displays information as a part of a user interface (**Fox**, C 05 L 62: a graphical user interface). Fox fails to teach the automatic imputing of variables for which values are missing. See Claim 8 for rationale for obviousness.

As to **claim 10**, Fox does not teach the method of claim 9 in which the automatic imputing is invoked based on a variable or type of variable.

Reasoning for why automatic imputing is obvious has been discussed in claims 8 and 9. Further, Fox discloses variables (**Fox**, C12 L 51: regression structure file; C12 L 56: regression variables). It would have been obvious to one with ordinary skills in the art at the time the invention was made to see that the imputing would be based on the variable or the type of variable because in order to substitute for missing values they must be of the same type and a system must be aware of that.

As to **claim 11**, Fox teaches the method of claim 9 in which the variables may be used in the model or (**Fox**, C 12 L 59: variable data base normal values map into

weather impact model) may be transformed (**Fox**, C 11 L 42: transforms the datasets) for use in the model.

However, Fox does not teach variables for which missing values are imputed. See claims 8 and 9 for obviousness discussion and rationale.

4. Claim 7 rejected under 35 U.S.C. 103(a) as being unpatentable over Fox as applied to claim 6 above, and further in view of Lapointe, (USPN 6556977, referred to as **Lapointe**).

As to **claim 7**, Fox does not teach the method of claim 6 in which the adjustment of the unstable values comprises Bayesian renormalization.

However, Lapointe teaches Bayesian decision theory (**Lapointe**, C 02 L 14: Bayesian decision theory). It would have been obvious to one with ordinary skills in the art at the time the invention was made to combine the two references because they both relate to decision support functions. Further, by using Bayesian renormalization for adjusting the unstable values, it would improve the accuracy of the prediction values, considering the large quantities of variables and complex interactions between variables involved in weather prediction. Renormalization is an essential step in the estimation process.

Response to Argument

5. The rejections to claim 10 under U.S.C. 112 have been withdrawn.
6. Applicant's arguments filed on Oct 04, 2007 related to Claims 1-11 have been fully considered but are not persuasive.

In reference to Applicant's argument:

Fox did not describe or made obvious "transformations applied to historical multi-dimensional data based on the strength of measurement represented by a variable."

Examiner's response:

Fox discloses historical weather data (**Fox**, C 18 L 50: historical weather data) and strength of measurement represented by a variable (**Fox**, C 14 L 60: "k" variables; also see C 06 L 22: weather and other variables; **EN**: climatology in general uses multiple source elements like temperature, precipitation etc. see C 05 L 16).

In reference to Applicant's argument:

Fox did not describe adjustment of unstable values in order to reduce inaccurate associations between variables of different strengths of measurement.

Examiner's response:

Fox uses regression techniques to adjust unstable values (**Fox**, C 14 L 64: regression is the statistical technique employed; **EN**: regression is a statistical technique that deals

with adjustment and counter-adjustment). Further, he does correlation to establish associations (**Fox**, C 05 L 55: weather impact measurement through historical correlation; **EN**: correlation is to establish a relation between variables, and measurement through correlation would be based on the strength of measurement represented by a variable).

Examination Considerations

7. Examiner has cited particular columns and line numbers or paragraph numbers in the references applied to the claims above for the convenience of the applicant. Although the specified citations are representative of the teachings of the art and are applied to specific limitations within the individual claim, other passages and figures may apply as well. It is respectfully requested from the Applicant in preparing responses, to fully consider the references in their entirety as potentially teaching all or part of the claimed invention, as well as the context of the passage as taught by the prior art or disclosed by the Examiner. The entire reference is considered to provide disclosure relating to the claimed invention.

Conclusion

8. Claims 1-11 are rejected.

9. THIS ACTION IS MADE FINAL. Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO MONTHS** of the mailing date of this final action and the advisory action is not mailed until after the end of the **THREE-MONTH** shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than **SIX MONTHS** from the mailing date of this final action.

Correspondence Information

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Bharadwaj Kalpana whose telephone number is (571) 270-1641. The examiner can normally be reached on Monday-Friday 7:30am 5:00 pm EST.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, David Vincent can be reached on (571) 272-3080. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.


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KB

Dec 19, 2007


DAVID VINCENT
SUPERVISORY PATENT EXAMINER